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nel, so as to become adequate to the discharge of the water. The peculiarities of the rise and fall of the tides at adjacent places, is referred by the author principally to the accumulation that takes place in these basins. That the tides do not meet at Dungeness in a line across the Channel, is further proved by the absence of that violent concussion of water which in such a case would ensue; the fact being, that the formation of the coast by gradually altering the course of the tide between the South Foreland and buoy of the Nore, from E.N.E. to W.N.W. within the stream of the Goodwin Sands, occasions a gentle blending of the waters, so that there is only a strong eddy about the Kentish Knock, and a foamy rippling where they meet and proceed onwards together.

On the Ova of the different Tribes of Opossum and Ornithorhynchus.
By Sir Everard Home, Bart. V.P.R.S. Read March 25, 1819.
[*Phil. Trans.* 1819, p. 234.]

With his previously acquired knowledge respecting the formation of the ova of quadrupeds in *Corpora lutea*, Sir Everard proceeds to inquire into that of the Opossum tribe, the ova of which are not formed in the same manner, but make two distinct gradations between the quadruped and *Ornithorhynchus paradoxus*, which last approaches so near to the bird, as to complete the link of gradation between the quadruped and bird in their mode of generation. Sir Everard first describes the formation of the ova in the Kangaroo, which, when expelled from the *Corpus luteum*, receive a yolk in the Fallopian tube, and afterwards the albumen in the uterus. The fetus, when expelled from the uterus into the marsupium, attaches itself to the nipple, as described in the 85th and 100th volume of the Philosophical Transactions. In the Kola and Wombat, and great and small Opossum, instead of *Corpora lutea* there are yolk bags imbedded in the substance of the ovarium; and there are two uteri, with a Fallopian tube to each, the ovum in each uterus being separately impregnated in its own cavity.

The mode of formation of the ova in the *Ornithorhynchi*, forms the intermediate link between the Opossum and bird. The yolk bags are imbedded in the ovaria; and instead of a regular uterus, each Fallopian tube swells out into a cavity, in which the ova are impregnated.

The Results of Observations made at the Observatory of Trinity College, Dublin, for determining the Obliquity of the Ecliptic, and the Maximum of the Aberration of Light. By the Rev. J. Brinkley, D.D. F.R.S. and M.R.I.A. and Andrews Professor of Astronomy in the University of Dublin. Read April 1, 1819. [*Phil. Trans.* 1819, p. 241.]

The obliquity of the ecliptic, as deduced from the early observations by the Greenwich quadrant, compared with the present ob-

liquity, gives the diminution for an interval of nearly sixty years, with almost sufficient accuracy to state with some confidence the mass of Venus; but to obtain this point with certainty, the present obliquity, deduced from a mean of the observations of different astronomers, should be used. Upon this subject the author alludes to the opinion of astronomers, that observations of the winter solstice have given a less obliquity than those of the summer solstice,—an opinion sustained by the observations of Maskelyne, Arago, and Pond, but questioned by Bessel and Bradley. Dr. Brinkley refers this difference to some unknown modification of refraction; he has observed that at the winter solstice the irregularity of refraction for the sun is greater than for the stars at the same zenith-distance. He points out the necessity of paying attention to the observations at the winter solstice, and gives a table, exhibiting the mean obliquity reduced to January 1813.

Dr. Brinkley next alludes to the maximum of the aberration of light, which appears from his observations of last year to be $20''\cdot80$.

On some New Methods of investigating the Sums of several Classes of Infinite Series. By Charles Babbage, Esq. A.M. F.R.S. Read April 1, 1819. [*Phil. Trans.* 1819, p. 249.]

The object of this paper is to explain two methods of finding the sums of a variety of infinite series. One of these the author discovered several years ago; but finding that some of the results to which it led were erroneous, he then declined publishing it. In inquiring into the causes of these errors, he was led to the second method, which employs the process of integration relative to finite differences. The cause of the fallacies in the former method was afterwards discovered, and in this paper a criterion is proposed for judging of the truth of the results, and a mode of correcting them where found to be erroneous. The sums of a variety of series are found by these methods; and the author concludes by observing, that he has since been informed by M. Poisson, that that gentleman had arrived at some nearly similar results in investigating a problem in physical astronomy, and also that some investigations of a similar nature were found amongst the papers of Lagrange, but that neither of these mathematicians had explained the cause of the errors, or given a method of correcting them.

On the Optical and Physical Properties of Tabasheer. By David Brewster, LL.D. F.R.S. Lond. and Edin. In a Letter to the Right Hon. Sir Joseph Banks, Bart. G.C.B. P.R.S. &c. Read May 6, 1819. [*Phil. Trans.* 1819, p. 283.]

Tabasheer is a substance found in the cavities of the bamboo, existing originally in the state of a transparent fluid, but gradually indurating into a solid of different degrees of hardness: it consists of 70 silica, + 30 potash and lime. One variety has a milky trans-